National Cancer Institute

A Snapshot of Lung Cancer

Incidence and Mortality

Lung cancer is the second most common cancer and the primary cause of cancer-related death in both men and women in the United States. The overall mortality rate for lung and bronchus cancers rose steadily through the 1980s and peaked in the early 1990s. Trends in lung cancer incidence and mortality rates have closely mirrored historical patterns of smoking prevalence, after accounting for a lag period. Because the prevalence of smoking peaked later in women than in men, incidence and mortality rates for men have dropped over the past two decades but only recently have begun to decrease for women. Mortality rates are highest among African-American males, followed by white males.

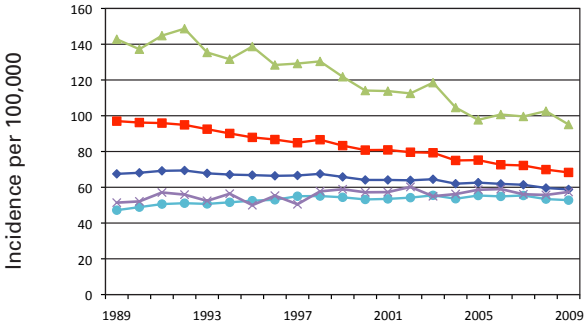
Although smoking is the main cause of lung cancer, lung cancer risk also is increased by exposure to secondhand smoke and environmental exposures such as radon and workplace toxins (e.g., asbestos, arsenic). The risk of lung cancer can be reduced by eliminating or reducing exposure to any of these risk factors. The National Lung Screening Trial has shown that screening current or former heavy smokers with low-dose helical computed tomography (CT) decreases the risk of dying from lung cancer. Standard treatments for lung cancer include surgery, radiation therapy, chemotherapy, targeted therapy, laser therapy, photodynamic therapy, cryosurgery, and electrocautery.

It is estimated that approximately $12.1 billion[1] is spent in the United States each year on lung cancer treatment

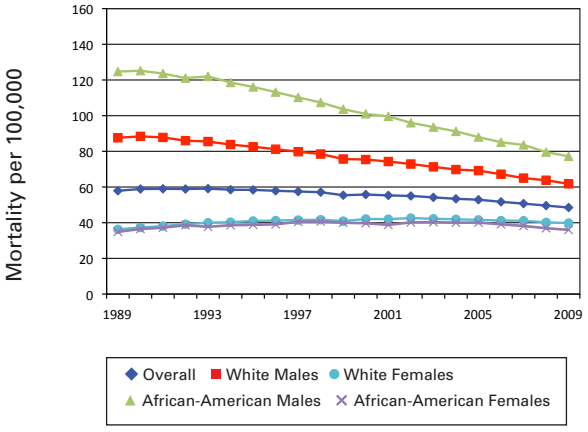
Source for incidence and mortality data: Surveillance, Epidemiology, and End Results (SEER) Program and the National Center for Health Statistics. Additional statistics and charts are available at the SEER Web site.

[1] Cancer Trends Progress Report, in 2010 dollars.

U.S. Lung Cancer Incidence



U.S. Lung Cancer Mortality



Trends in NCI Funding for Lung Cancer Research

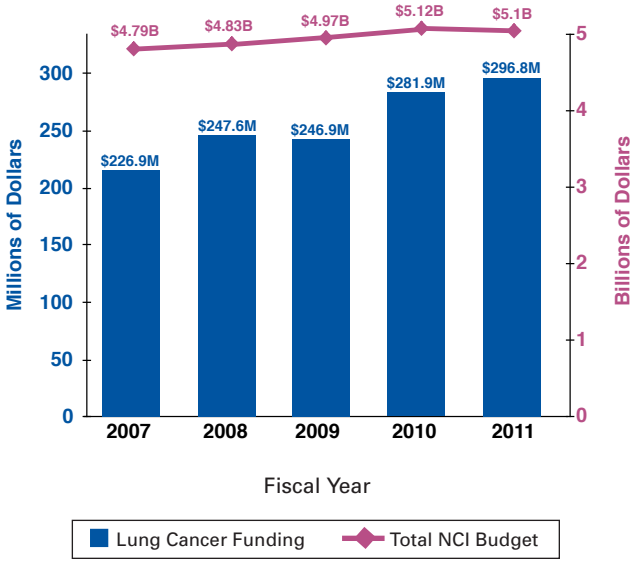
The National Cancer Institute's (NCI) investment[2] in lung cancer research increased from $226.9 million in fiscal year (FY) 2007 to $296.8 million in FY 2011. In addition to this funding, NCI supported $69.3 million in lung cancer research in FY 2009 and 2010 using funding from the American Recovery and Reinvestment Act (ARRA).[3]

Source: NCI Office of Budget and Finance.

[2] The estimated NCI investment is based on funding associated with a broad range of peer-reviewed scientific activities. For additional information on research planning and budgeting at the National Institutes of Health (NIH), see About NIH.

[3] For more information regarding ARRA funding at NCI, see Recovery Act Funding at NCI.

NCI Lung Cancer Research Investment



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

If you are reading a paper copy of this Snapshot: PDF Snapshots with hyperlinks to additional information and resources can be found online at: http://www.cancer.gov/aboutnci/servingpeople/cancer-statistics/snapshots

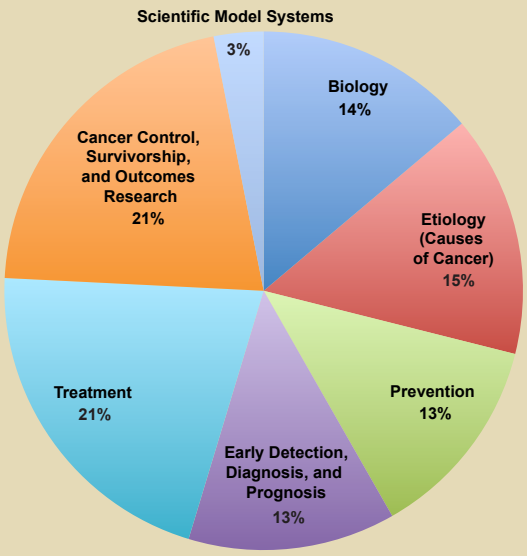
Examples of NCI Activities Relevant to Lung Cancer

- **The Cancer Genome Atlas (TCGA)** project is systematically identifying the major genomic changes involved in more than 20 cancers using state-of-the-art genomic analysis technologies. TCGA researchers hope to identify genomic changes that divide lung cancer into molecular subgroups and that distinguish between lung squamous cell carcinoma and adenocarcinoma and between lung cancer in smokers and nonsmokers.
- The **Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial** is determining whether certain cancer screening tests reduce deaths from prostate, lung, colorectal, and ovarian cancers. Results from the lung cancer component of the PLCO showed that regular chest X-rays (compared to no screening) did not reduce deaths from lung cancer in both men and women.
- **Environment and Genetics in Lung Cancer Etiology (EAGLE)**, a collaboration between scientists from the United States and Italy, aims to identify the genetic and environmental determinants of both lung cancer and smoking and to elucidate determinants of successful therapy and long-term survival in patients with lung cancer.
- The NCI-supported **National Lung Screening Trial** compared two ways of detecting lung cancer—low-dose helical CT and standard chest X-ray—to determine the effects of these screening techniques on lung cancer mortality.
- NCI's **Smokefree TXT**, a component of the **Smokefree Teen** initiative, is a free text messaging service that helps teens who are trying to quit smoking.
- Seven lung-cancer-specific **Specialized Programs of Research Excellence (SPOREs)** are characterizing the molecular heterogeneity of lung cancer, investigating chemopreventive agents, and pursuing new therapies.

Additional Resources for Lung Cancer

- The **What You Need To Know About™ Lung Cancer** booklet provides information about lung cancer diagnosis, staging, treatment, and comfort care. Information specialists also can answer questions about cancer at 1-800-4-CANCER.
- The NCI **Lung Cancer Home Page** provides up-to-date information on lung cancer treatment, prevention, genetics, causes, screening, testing, and related topics.
- The **Harms of Smoking and Health Benefits of Quitting Fact Sheet** provides information on the health risks of tobacco smoke for smokers and nonsmokers, the harmful effects of other tobacco products, the benefits of quitting, and smoking cessation resources.
- Information on treatment options for **non-small cell lung cancer** and **small cell lung cancer** is available from **PDQ**, NCI's comprehensive cancer database.
- **Clinical trials for non-small cell lung cancer** and **small cell lung cancer** can be found in NCI's list of clinical trials.

NCI Lung Cancer Research Portfolio



Percentage of Total Dollars by Scientific Area
Fiscal Year 2011

Data source: NCI Funded Research Portfolio. Only projects with assigned scientific area codes are included. A description of relevant research projects can be found on the NCI Funded Research Portfolio Web site.

Selected Advances in Lung Cancer Research

- A preclinical study showed that **low-dose nicotine does not enhance lung cancer development**, suggesting that nicotine replacement therapy is safe for former smokers. Published October 2011.
- Results of the PLCO trial revealed that **annual chest X-ray screening of people aged 55 to 74 years does not reduce lung cancer mortality** compared with usual care. Published October 2011.
- An epidemiological study of underground mine workers found that moderate to heavy **exposure to diesel exhaust is associated with an increased risk of lung cancer deaths**. Reported March 2012.
- A "co-clinical trial" (a study using a genetically engineered mouse model that mirrors an ongoing clinical trial) identified **genetic biomarkers that predict response to targeted therapy** in some lung cancers. Published March 2012.
- Click here to access selected free full-text journal articles on advances in NCI-supported research relevant to lung cancer. Click here to search for additional scientific articles or to complete a search tutorial on PubMed.